constant current of 30 mA until the applied voltage reached 180 V, after which the voltage was held constant at 180 V and the current slowly declined. It took a little over two hours for the applied voltage to rise to 180 V from the initial value of 89 V. The entire experiment took almost four hours.

After the electrophoresis was done, the gel was removed from between the glass plates and stained with Coomassie Blue R250 dye dissolved in a solution of methanol (40%), acetic acid (10%), and water (50%). The dye preferentially sorbed in protein-rich areas, giving dark protein bands, and leaving no doubt that electrophoretic migration according to molecular size had taken place with good resolution. A graph of the migration distances (corrected for 4.9% gel swelling in the staining solution) plotted as abscissae and the logarithm molecular weights plotted as ordinates was nearly linear, which is what one often observes for SDS-PAGE. Thus, the gel medium of this Example provided results very similar to those obtained in SDS-PAGE with gels made from acrylamide/bis polymerization.

The invention has been described in detail with particular reference to preferred embodiments thereof, but it will be understood that variations and modifications can be effected within the spirit and scope of the invention.

What is claimed is:

**1**. A method for preparing an electrophoresis gel medium while minimizing exposure to harmful chemicals which comprises forming a solution of (1) a water soluble, uncrosslinked, non-ionic copolymer of a mixture of uncharged vinyl monomers, said mixture comprising (a) at least about 50% by weight of a monomer selected from the unsubstituted and substituted acrylamide monomers; (b) from about 1% to about 50% by weight of a monomer that contains an active methylene group and (c) from 0 to about 49% by weight of one or more vinyl monomers different from monomers (a) and (b); and (2) an electrophoresis buffer in deionized water employing such proportions of copolymer, buffer and water as to provide a gel of the desired copolymer concentration and pH, providing means with which to form a shaped electrophoresis gel medium of the desired dimensions, adding to said solution of copolymer and buffer that reacts with the functional groups on the repeating units in the copolymer derived from monomer (b) in such concentration of crosslinking agent as to cause gelation to occur within a time period of from about 5 minutes to about 15 hours after said addition, and then promptly employing said gel shaping means to form the gel medium of desired dimensions from the gel thereby produced.

**2**. The method of claim **1** wherein said concentrations are so selected that gelation occurs within from about 15 minutes to about 45 minutes after addition of said crosslinking agent.

**3**. The method of claim **1** wherein said copolymer comprises at least one monomer selected from the group consisting of acrylamide, N-isopropylacrylamide, N-hydroxymethylacrylamide, N-(1,1-dimethyl-3-oxobutyl)acrylamide, N-methylmethacrylamide, 2-acrylamido-2-hydroxymethyl-1,3-propanediol, methacrylamide, N,N-dimethylacrylamide, N,N-diethylacrylamide, N-isopropylmethacrylamide, and 3-(2-dimethylaminoethyl)acrylamide and at least one monomer selected from the group consisting of N-(3-acetoacetamidopropyl)methacrylamide, 2-acetoacetoxyethyl acrylate, 2-acetoacetoxyethyl methacrylate, ethyl α-acetoacetoxymethylacrylate, 2-cyanoacetoxyethyl methacrylate, ethyl acryloylacetate, 6-(m- and p-vinylphenyl)-2,4-hexanedione (60:40); ethyl 5-(m- and p- vinylphenyl)-3-oxopentanoate (60:40) and the corresponding methyl ester, N-(2-acetoacetoxyethyl)acrylamide, N-(2-acetoacetamidoethyl)methacrylamide, 4-acetoacetyl-1-methacryloylpiperazine, acetoacetamidoethyl methacrylate, and N-(3-acetoacetamidopropyl) methacrylamide.

**4**. The method of claim **1** wherein said crosslinking agent is selected from the group consisting of gelatin hardeners, active esters, active halogen compounds, aziridines, active olefins, vinylsulfones, and halogen-substituted aldehyde acids.

**5**. The method of claim **1** wherein said crosslinking agent is selected from the group consisting of formaldehyde, glyoxal, succinaldehyde, glutaraldehyde, bis(-vinylsulfonylmethyl) ether, bis(vinylsulfonyl)methane, mucochloric acid, mucobromic acid, dialdehyde starch, poly(acrolein-co-methacrylic acid), poly(acrylamide-co-2-chloroethylsulfonylmethylstyrene), and poly(acrylamide-co-vinylsulfonylmethylstyrene).

**6**. The method of claim **5** wherein said copolymer is poly[acrylamide-co-N-(3-acetoacetamidopropyl)methacrylamide] having a weight ratio of acrylamide to the comonomer of 95:5.

**7**. The method of claim **6** wherein said buffer is tris(-hydroxymethyl)aminoethane.

**8**. The method of claim **6** wherein said crosslinking agent is glyoxal.

**9**. An electrophoresis gel medium prepared by the method of claim **1**.

**10**. The method of claim **1** wherein said monomer (a) is acrylamide.

**11**. The method of claim **1** wherein said monomer (b) is N-(3-acetoacetamidopropryl)methacrylamide.

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